

A Sample Lab Report Template

Guidelines for Writing a Formal Laboratory Report

Introduction

Formal labs begin with an introduction (*not* a procedure statement). A good introduction should include all pertinent background information needed for a reader to understand the lab (i.e., definitions of terms used, historical background if appropriate, pertinent scientific laws and theories, chemical equations, mathematical formulas, and so on). After the background information has been provided, you must then include a concise **statement of the problem** that is being investigated in the lab activity. In senior science courses you may also be required to include a **hypothesis** (a possible explanation for what you expect to observe, which can be adequately tested in the lab activity). If a hypothesis is required, include it immediately after the problem statement.

Materials

Make a list of all the materials used in the lab activity. If required, include a neat, labeled diagram. Use a ruler and pencil for drawing; you may use a pen for the labels.

Procedure

Make a brief summary of what was done during the lab activity. The procedure must be written up in the past tense passive, describing “what was done” rather than “what you do.” For example, write “The apparatus was set up as directed” and “Appropriate observations were made.” Do not write statements such as “Set up the apparatus as directed” (present tense) or “We made appropriate observations” (active).

Observations

If descriptive (qualitative) observations are required, they should be written up in proper sentences and should generally describe what was seen before (e.g., the reactants in a chemical reaction), during (changes that occurred during the experiment), and after (e.g., the chemical products) the experiment was completed. Quantitative data must be recorded in table form.

Calculations

Whenever you have collected quantitative data, you must include sample calculations showing how your results were obtained. For example, if your experiment involved collecting data on mass and volume, and you are required to determine densities, you must show how you calculated the densities (using correct units). You must also plot accurate graphs of quantitative data, whenever appropriate.

Conclusion(s)

A good conclusion is a summary statement that answers the question(s) posed in the original problem statement. Occasionally a summary of the findings made in the activity is also appropriate.

Discussion

A discussion follows the conclusion and allows you to extend the ideas developed during the lab activity. The discussion should also introduce concepts intended to help improve your thinking and problem-solving skills. In most labs that you do, you will simply be required to answer a set of prepared questions. In some senior courses you may be required to prepare your own discussion.

Sources of Experimental Error

Since no science activity, or scientist for that matter, is perfect, you must list errors that may have been made during your collection of data. In some senior courses, you may be required to quantify this error by assigning, with explanation, appropriate precisions to the observed and calculated results.